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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/428,125 10/26/99 AGARWAL

V MI22-1299

EXAMINER

021567 MM91/1031  
WELLS ST JOHN ROBERTS GREGORY AND MATKIN  
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601 W FIRST AVENUE  
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ROSE, K

ART UNIT

PAPER NUMBER

2822

DATE MAILED:

10/31/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Applicati n No.

09/428,125

Applicant(s)

AGARWAL ET AL.

Examin r

Kiesha L. Rose

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 October 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 38-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 38-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5-7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

This Office Action is in response to the filing of the application.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 38 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Roh (U.S. Patent 5,783,253).

Roh discloses a capacitor (Fig. 1e), which contains a first electrode (4) and a second electrode (8) with two immediately juxtaposed and contacting barium strontium titanate (BST) dielectric layers (6, 7).

Claims 38-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuda et al. (U.S. Patent 6,143,597).

Matsuda discloses a capacitor (Fig. 1d), which contains a lower electrode (2) and an upper electrode (4) with two  $\text{SrBi}_2\text{Ta}_2\text{O}_9$  dielectric layers (5,8) formed there between. One of the dielectric layers is crystalline and the other is amorphous or the two dielectric layers can be crystalline. Since the dielectric layers are made from the same material they will have the characteristics that make the crystalline layers have a lateral shift in grain boundaries from one layer to the other.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roh in view of Fujii et al. (U.S. Patent 5,661,319).

Roh discloses all of the limitations except for the dielectric layers to be two different titanate compounds. Whereas Fujii discloses a capacitor (Fig. 1) with a barium strontium titanate layer (101) that has a lead titanate layer (102) form thereon. Instead of the dielectric layers being made both of titanate compounds they can both also be made of tantalum pentoxide. Having both of the dielectric layers made of tantalum pentoxide allows them to act as a diffusion barrier which prevents the diffusion of silicon into the dielectric film. (Column 3, lines 47-53) The two dielectric layers can also be made from barium strontium titanate layer and lead titanate layer, which possess a high dielectric constant. (Column 3, lines 54-58, Column 6, lines 60-65) Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Roh device by incorporating two dielectric layers made of a titanate material and a tantalum pentoxide to prevent the diffusion of silicon into the dielectric film as taught by Fujii.

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roh in view of Gnade et al. (U.S. Patent 6,275,370).

Roh discloses all of the limitations except for forming one of the dielectrics from a titanate compound and the other dielectric from tantalum pentoxide. Gnade discloses a capacitor (Fig. 8), which contains a tantalum pentoxide layer (40) with a barium strontium titanate layer (38) formed thereon. The tantalum pentoxide layer and barium strontium titanate layer are formed on top of each other and also causes high contact resistance (Column 1, lines 56-62, Column 2, lines 3-5). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Roh and by incorporating dielectric layers formed from a titanate compound and the other dielectric layer formed from tantalum pentoxide to cause high contact resistance as taught by Gnade.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 703-605-4212. The examiner can normally be reached on M-F 8:30-6:00 off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Art Unit: 2822

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

KLR

KLR

October 23, 2001

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800